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Sequence Listing was accepted.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866)  
217-9197 (toll free).

Reviewer: markspencer

Timestamp: [year=2008; month=10; day=17; hr=14; min=7; sec=33; ms=914; ]

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Application No: 09541094 Version No: 1.0

**Input Set:****Output Set:**

**Started:** 2008-10-17 13:50:27.890  
**Finished:** 2008-10-17 13:50:29.731  
**Elapsed:** 0 hr(s) 0 min(s) 1 sec(s) 841 ms  
**Total Warnings:** 18  
**Total Errors:** 2  
**No. of SeqIDs Defined:** 19  
**Actual SeqID Count:** 19

| Error code | Error Description   |
|------------|---|
| W 251      | Found intentionally skipped sequence in SEQID (1 )                                |
| W 251      | Found intentionally skipped sequence in SEQID (2 )                                |
| W 402      | Undefined organism found in <213> in SEQ ID (3)                                   |
| W 213      | Artificial or Unknown found in <213> in SEQ ID (4)                                |
| E 249      | Order Sequence Error <210> -> <220>; Expected Mandatory Tag: <211> in SEQID ( 5 ) |
| W 213      | Artificial or Unknown found in <213> in SEQ ID (6)                                |
| W 213      | Artificial or Unknown found in <213> in SEQ ID (7)                                |
| W 213      | Artificial or Unknown found in <213> in SEQ ID (8)                                |
| W 213      | Artificial or Unknown found in <213> in SEQ ID (9)                                |
| W 213      | Artificial or Unknown found in <213> in SEQ ID (10)                               |
| W 402      | Undefined organism found in <213> in SEQ ID (11)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (12)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (13)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (14)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (15)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (16)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (17)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (18)                                  |
| W 402      | Undefined organism found in <213> in SEQ ID (19)                                  |

**Input Set:**

**Output Set:**

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| Error code | Error Description  |
|------------|--|
| E 250      | Structural Validation Error; Sequence listing may not be indexable |

# SEQUENCE LISTING

<110> St.George-Hyslop, Peter H.  
Fraser, Paul E.  
University of Toronto

<120> A novel presenilin associated membrane  
protein and uses thereof

<130> 1034/1F812-US1

<160> 19

<170> FastSEQ for Windows Version 3.0

<210> 1

<400> 1

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<210> 2

<400> 2

000

<210> 3

<211> 422

<212> DNA

<213> mouse

<400> 3

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| gggggtcttct tcttctgtct ttttcctggt tactggcagg attgtgtggg ggaaactcag | 120 |
| tggagaggaa aatctacatt cccttaaata aaacagctcc ttgtgtccgc ctgctcaacg  | 180 |
| ccactcatca gattggctgc cagtcttcaa ttagtgggga tacaggggtt atccatgtag  | 240 |
| tggagaaaaga agaagactga agtgggtgtt gacgatggcc ccaacccct tacatggtct  | 300 |
| gctggaggga agtcttcaca gagatgtaat ggagaagctg aggacaacag tagatcctgg  | 360 |
| tcttgccgtg attagcagcc actcacttaa gtttctctag tgtgagtgcc aatgatgggt  | 420 |
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<210> 4

<211> 473

<212> DNA

<213> unknown

<220>

<223> EST from unknown organism

<400> 4

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| ccactcatca gattggctgc cagtcttcaa ttagtgggga tacaggggtt atccatgtag | 120 |
| tggagaaaaga agaagacctg aagtgggtgt tgaccgatgg cccaacccc ccttacctgg | 180 |
| ttctgctgga gggcaagctc ttcaccagag atgtaatgga gaagetgaag ggaacaacca | 240 |
| gtagaatcgc tgggtcttgc gtgactctag ccaagcccaa ctcaacttca agcttctctc | 300 |
| ctagtgtgca gtgcccaaat gatgggtttg gtaattactc caactcctac gggccagagt | 360 |

|            |            |            |            |            |            |     |
|------------|------------|------------|------------|------------|------------|-----|
| ttgctcactg | gaagaaaaca | ctgtggaatg | aactcggcaa | aggcttggt  | tatgaagacc | 420 |
| ttagtttccc | caatcttct  | cctggagatg | aggaccgaaa | caaggtcatc | aag        | 473 |

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<220>

<223> null

<400> 5

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<210> 6

<211> 463

<212> DNA

<213> unknown

<220>

<223> EST from unknown organism

<400> 6

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|-------------|------------|------------|-------------|------------|------------|-----------|-----|
| gggctcga    | aaa        | catctctggc | gtggctcctgg | ctgaccactc | tggtctcttc | cacaatcgg | 60  |
| attaccagag  | catttatgac | acggctgaga | acattaatgt  | gacctatcct | gagtggcaga |           | 120 |
| gccatgaaga  | ggacctcaac | tttgtgacag | acactgccaa  | ggcactggcg | aatgtggcca |           | 180 |
| cagtgtctggc | gcgtgcactg | tatgagcttg | caggaggaac  | caacttcagc | agctccatcc |           | 240 |
| aggctgatcc  | ccagacagtt | acacgtctgc | tctatgggtt  | cctggttaga | gctaacaact |           | 300 |
| catggtttca  | gtcgatcctg | aaacatgacc | taaggtccta  | tttggatgac | aggcctcttc |           | 360 |
| aacactacat  | cgccgtctcc | agccctacca | acacgactta  | cgttgtgcag | tacgccttgg |           | 420 |
| caaacctgac  | tgggcaaggc | gaccaacctc | acccgagagc  | agt        |            |           | 463 |

<210> 7

<211> 481

<212> DNA

<213> unknown

<220>

<223> EST from unknown organism

<400> 7

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|------------|------------|------------|------------|------------|-------------|-----|
| gaggacctca | actttgtgac | agacactgcc | aaggcactgg | cgaatgtggc | cacagtgtctg | 60  |
| gcgcgtgcac | tgtatgagct | tgcaggagga | accaacttca | gcagctccat | ccaggctgat  | 120 |
| ccccagacag | ttacacgtct | gctctatggg | ttcctggtta | gagctaaca  | ctcatggttt  | 180 |
| cagtcgatct | tgaacatga  | cctaaggctc | tatttggatg | acaggcctct | tcaacactac  | 240 |
| atcgccgtct | ccagccctac | caacacgact | tacgtttgtc | agtacgcctt | ggcaaacctg  | 300 |
| actggcaagg | cgaccaacct | cacccgagag | cagtgccagg | atccaagtaa | agtcccaaat  | 360 |
| gagagcaagg | atttatatga | atactcgtgg | gtacaaggcc | cttggaatc  | caacaggaca  | 420 |
| gagaggctcc | cacagtgtgt | gcgtccacag | tgcgactggc | aagggtctgt | ccctgccttt  | 480 |
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<210> 8

<211> 398

<212> DNA

<213> unknown

<220>

<223> EST from unknown organism

<400> 8

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| agagctaaca | actcatgggt | tcagtcgata | ttgaaacatg  | acctaaggcc | tatttggtatg | 60  |
| acaggcctct | tcaacactac | atcgccgtct | ccagccctac  | caacacgact | tacgttgtgc  | 120 |
| agtacgcctt | ggaaacctga | ctggcaaggc | gaccaacctc  | acccgagagc | agtgccagga  | 180 |
| tccaagtaaa | gtcccaaagt | agagcaagga | tttatatgaa  | tactcgtggg | tacaaggccc  | 240 |
| ttggaattcc | aacaggacag | agaggctccc | acagtgtgtg  | cgctccacag | tgcgactggc  | 300 |
| cagggccttg | tcacctgcct | ttgaactgag | tcagtgagagc | tccacagaat | actctacgtg  | 360 |
| ggcggagagc | cgctggaaag | acatccaagc | tcggatat    |            |             | 398 |

<210> 9

<211> 172

<212> DNA

<213> unknown

<220>

<223> EST from unknown organism

<400> 9

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|------------|------------|------------|------------|-------------|-------------|-----|
| tgtgcgctcc | acagtgcgac | tggccagggc | gttgtcacct | gcctttgaac  | tgagtcagtg  | 60  |
| gagctccaca | gaatactcta | cgctggcgga | gagcgcgtag | aaagacatcc  | cagctcggtat | 120 |
| attcctaatt | gccagcaaag | agcttgagtt | catcacgctg | atcgtagggct | tc          | 172 |

<210> 10

<211> 425

<212> DNA

<213> unknown

<220>

<223> EST from unknown organism

<400> 10

|             |             |            |             |             |             |     |
|-------------|-------------|------------|-------------|-------------|-------------|-----|
| tttttttttt  | ttttttgtat  | tgcataatth | taatgaaact  | tgctattttat | atacttacia  | 60  |
| aaaaaaaaaa  | aaaggaaaaa  | accccaacaa | aaatagataa  | ttatagttht  | ataataaaaa  | 120 |
| gtacaactga  | gcaactgtgg  | ctggaggtag | gatacccact  | taacagcgtag | cccacactaa  | 180 |
| catgccatct  | gcacacctgg  | agaaaggaca | gtgggaaaga  | gacactggct  | cagccaggga  | 240 |
| atccattttct | tccttaagggt | ttcagggtag | ttgaatgcag  | atgcacaatc  | tttcacaccc  | 300 |
| tcttctgtgt  | gcagcaggtg  | gctgaatatg | ggggaggggt  | gtcgggtgac  | agtggagtca  | 360 |
| gagggcagta  | cagggcagga  | tggagggaca | gaaggatatcc | cgagaaagggt | cagaggagggt | 420 |
| tgggt       |             |            |             |             |             | 425 |

<210> 11

<211> 4560

<212> DNA

<213> C. Elegans

<400> 11

|             |             |             |             |             |            |     |
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| taattatcgc  | tgggaatacga | tgcgacggat  | tttcggatca  | agttttccga  | actctgttca | 120 |
| ttggagaagg  | aatgacgtgc  | tatagaactt  | ttataaaaa   | gcacgaattc  | ggttgtcaag | 180 |
| gtaaaaattg  | aatgattttca | aataattaca  | tataaaaaaa  | tattgcaactg | ttttttcatt | 240 |
| atttttcattg | aaaatttagtg | tcaaaatatg  | tataaatcaa  | tattttatctg | aaaataactg | 300 |
| gaaatataga  | gaaagtgtct  | caaaatggcc  | aaaacgttgt  | caattgccga  | agacgatact | 360 |
| ctataataaa  | cggcaattgg  | caactttcgg  | gctgtttttc  | aacactgttc  | aatttgtcag | 420 |
| atgaaaataa  | ttttatttttc | agttaaactca | agtgtattttc | tatatgtgtg  | cagtgaaaaa | 480 |
| aattcatag   | ccatttttgt  | gaattgccga  | aaataactcc  | acctctgaat  | tacatgcatt | 540 |
| ttcactagaa  | aatatcattt  | acatacattt  | taattttataa | atatccagta  | tttatttatt | 600 |
| ttcttaaaact | catttttcaag | aaaaatatth  | tcagctaattc | gagaaaacga  | gaatggccta | 660 |
| attgttcgaa  | tcgacaaaaca | ggaagacttc  | aaaaatctcg  | attcttgcgtg | gaattcattt | 720 |

|             |            |             |            |             |            |      |
|-------------|------------|-------------|------------|-------------|------------|------|
| tatcccaa    | at         | at          | cttctccc   | tcaatttg    | tcgtcgtgat | 780  |
| acaatttt    | aattgaa    | atcgaaat    | ctttctgg   | tagtattata  | taatagt    | 840  |
| gaatctatt   | atccagg    | tgaatca     | gcagcttc   | atgatgc     | atgtccaa   | 900  |
| gctgcaagt   | attattat   | tcaagata    | aatgaaga   | attgtgaa    | aaagatta   | 960  |
| tctcggggt   | ctataac    | agatggat    | atgaaaat   | attggcgg    | acaaatgg   | 1020 |
| tttattgata  | attcaact   | tttggaa     | attgagaa   | gttattca    | gttcaata   | 1080 |
| ccaaaaga    | atgggttc   | tggatat     | tattgtgg   | tgagcttc    | tttggcta   | 1140 |
| atggcggct   | gaaattc    | aatttgct    | cggcgtgg   | aaaacgat    | aaagctgtt  | 1200 |
| cagatgaata  | ttgatag    | gtaggtttt   | aaatttta   | cagttaaa    | aggtgaatt  | 1260 |
| ttgcattatt  | aaatgcag   | tagaccgt    | atattgcat  | atgagatg    | tttcatgata | 1320 |
| atattcttta  | agaaaaata  | tttgaaaa    | tcataggaa  | ataaacaaa   | ttttgctaaa | 1380 |
| cttcatagtt  | tggcatttt  | tatctcgtt   | tttgttta   | taggggatt   | tttagtcaat | 1440 |
| aattgcaccg  | attccatg   | tctcttttt   | tcgaaatg   | ttgtacct    | atgccagac  | 1500 |
| agctataatt  | tctaatttt  | aaaaaata    | ttgtcca    | caatgcct    | atagttgaa  | 1560 |
| ttttccagag  | atgctcct   | actctgtg    | gcaatgc    | gtgacaat    | atttgcatt  | 1620 |
| ccaactccaa  | ttccaact   | tccaacaa    | gagacaata  | tcacgagca   | atatatgat  | 1680 |
| gtaactgctc  | gaatggac   | ttttgga     | attccagag  | tttctgtt    | cgaagtatcc | 1740 |
| gtactaactt  | caattattt  | tgtactcg    | gcagctcg   | caatggga    | acagatcgaa | 1800 |
| aaatggcaga  | aagcatcg   | tacttcga    | cgtaatgtt  | tctttgctt   | tttcaatggt | 1860 |
| gaatcgttg   | attatattg  | aagtgggtg   | gctgcgtat  | agatggag    | agttggaaa  | 1920 |
| tttaatttaa  | aaaacgtt   | agaactag    | actgatcaa  | aaaatttcc   | tattaacata | 1980 |
| aaatggccca  | aaaattcct  | aaaatttca   | aatttcaaaa | aaaaaaat    | ttcgggcaaa | 2040 |
| aaacataa    | ctagctgaa  | cctcaaatt   | ggcaagctt  | tcaggctcg   | aacataattt | 2100 |
| tggaagtcgt  | caatcaaaaa | ataattcag   | tttattcatt | tatgataat   | aattaaaatt | 2160 |
| ttccaacatt  | gtttgaaa   | ttttataat   | atatttggt  | attttaccat  | aattggaatg | 2220 |
| gttttcaatt  | attttccac  | tcttccttta  | gagaaaaaa  | atatttgtct  | tcagaaatgg | 2280 |
| aaagttccca  | caaatgatt  | gctctgat    | aacacacatt | catccaatt   | gcccgaatga | 2340 |
| gttagattat  | atactgga   | tacaacaa    | tggagttgct | aaaggacgaa  | aatattatgt | 2400 |
| acacgttgat  | ggagaacg   | atcaacag    | taagacacag | acagatcgag  | ttattgatcg | 2460 |
| aattgaacga  | ggtcttcg   | gtcatgctt   | tgatcttgaa | aaaccatctg  | gaagtggaga | 2520 |
| taggtgggtg  | catcgaaa   | agttttttt   | ttcaagaaca | tacagaaaac  | gaaaagcttt | 2580 |
| taaagcattt  | tctttaaaa  | ttaaaaca    | ttgagcatat | gtaaactaca  | attccgagtg | 2640 |
| tcgtttttcg  | aaaaaagt   | aaaattaaaa  | aaaagcttat | cgtcactat   | ttttcgaaaa | 2700 |
| taaggtattt  | ttccttta   | aaaggcaa    | gaaaaatctt | cagccatgga  | taggtgaatt | 2760 |
| atagaaataa  | ttttcaaaaa | ttttcctttt  | tcagagttcc | acccgcaagt  | tggcactcgt | 2820 |
| ttgccaaagg  | tgatgctc   | gttcaatcag  | ttctccttgc | accatattggt | aaagaatatg | 2880 |
| aatatcaacg  | agttaattc  | attttgata   | aaaatgagtg | gacagaagac  | gaacgagaga | 2940 |
| aagcaattca  | agagattgaa | gctgtttcta  | ctgctattct | ggcagcagcc  | gctgattatg | 3000 |
| ttggagttga  | aactgatgaa | gttgttgcaa  | aagttgataa | aaaattggta  | tgtattcttt | 3060 |
| tttttttttaa | ttttaaaact | ttcagcgaca  | attttagatg | tttattgttg  | aatttgaaat | 3120 |
| ttgcagtatt  | tttaaaact  | taaaacaaaa  | tccctgatga | cgcagcgatt  | catcgctgta | 3180 |
| ttttctaatt  | gctgaaattg | aattccatat  | atatggaata | tttcatatct  | ttacatataa | 3240 |
| acgttttttt  | ttttcagata | accactatat  | tcgattgtct | catcacttcc  | aatttctggt | 3300 |
| tcgactgtga  | ttttatgcaa | aaactcgatg  | cggtcgcta  | ccacaagctg  | tttaattcct | 3360 |
| acggttttaa  | tcaaaaatca | acatatat    | caatggaatc | ccatactgca  | ttccctaccg | 3420 |
| tactccattg  | gttaactatt | ttcgcttttg  | gtagtgacaa | agaaacattg  | aatgtgaaaa | 3480 |
| gtgaaaagag  | ctgctcacat | cttgggtcaat | ttcaagcgg  | gagtttttat  | tttaaacgaa | 3540 |
| tatcaaataa  | ttaaaatag  | tttcgcgcag  | tttcagatgt | atacctacac  | gtggcaaccg | 3600 |
| aatccgtaca  | cgggaaattt | cagttgtctg  | aaatctgcaa | ttgttaaaaa  | agtaatggtt | 3660 |
| tcgccggctg  | tagatttct  | aacaccgaa   | gaagaaatga | acacgagata  | ttcaacatgg | 3720 |
| atggaatcag  | tttatattat | tgaatctgtg  | aatttatatt | tgatggaaga  | tgcttcattt | 3780 |
| gaatatacaa  | tgattctgat | tgcggttatt  | tctgctttat | tatcaatctt  | tgcagttggt | 3840 |
| tagttttttt  | ttcaaaaaaa | aaattacaaa  | aataaatcac | aagcttttoga | gctttctcgt | 3900 |
| attcgaaaat  | gaaggagttt | cgcattaaa   | aaaactagat | tttgaatcag  | tttttcta   | 3960 |
| ctttagagaa  | attatactca | catttgatgc  | ccagaaaagt | ttgcgacttt  | tgagccaaaa | 4020 |
| gcacggtgcc  | aggtctcgac | acgaaaaatt  | tatattaatt | gaaaaatagt  | ttgcgccttt | 4080 |
| aaatggtact  | gtatttttca | attctcattg  | ctggcgattt | aaaaaaatgc  | atttttttaa | 4140 |

|  |      |
|--|------|
| tccataaaaag ttgagaaaaa tcgatgaaaa attgcacaga aatgagtgca agaaattaca | 4200 |
| gtattcttta aaggcgacaca ccttttcgca tttcacaaaa tttcatcgtg tcgataccgg | 4260 |
| gtaccgtatt ttggaggcaa aaatcgcaaa atctcgcgtc tggataatat cgtttatcgt  | 4320 |
| ttattgaagg aagtttttaa aaataagaaa aattgacagc tgcgagaaat tatgcataat  | 4380 |
| ttataaaaaca ataaaaattt tttttttcag gtcgctgttc tgaacaaca tttatcgttg  | 4440 |
| acgagggaga accagcagcg gaaggaggag aacctcttta acaaattatt ctcttcaaca  | 4500 |
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 <212> PRT  
 <213> C. Elegans

<400> 12

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
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| Met | Lys | Lys | Trp | Leu | Val | Ile | Val | Leu | Ile | Ile | Ala | Gly | Ile | Arg | Cys |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Asp | Gly | Phe | Ser | Asp | Gln | Val | Phe | Arg | Thr | Leu | Phe | Ile | Gly | Glu | Gly |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Asn | Ala | Cys | Tyr | Arg | Thr | Phe | Asn | Lys | Thr | His | Glu | Phe | Gly | Cys | Gln |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Ala | Asn | Arg | Glu | Asn | Glu | Asn | Gly | Leu | Ile | Val | Arg | Ile | Asp | Lys | Gln |
|     | 50  |     |     |     |     | 55  |     |     |     | 60  |     |     |     |     |     |
| Glu | Asp | Phe | Lys | Asn | Leu | Asp | Ser | Cys | Trp | Asn | Ser | Phe | Tyr | Pro | Lys |
| 65  |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |     |
| Tyr | Ser | Gly | Lys | Tyr | Trp | Ala | Leu | Leu | Pro | Val | Asn | Leu | Ile | Arg | Arg |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | Thr | Ile | Ser | Gln | Leu | Lys | Ser | Ser | Lys | Cys | Leu | Ser | Gly | Ile | Val |
|     |     |     | 100 |     |     |     |     |     | 105 |     |     |     |     | 110 |     |
| Leu | Tyr | Asn | Ser | Gly | Glu | Ser | Ile | His | Pro | Gly | Asp | Glu | Ser | Thr | Ala |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Ala | Ser | His | Asp | Ala | Glu | Cys | Pro | Asn | Ala | Ala | Ser | Asp | Tyr | Tyr | Leu |
|     | 130 |     |     |     |     | 135 |     |     |     |     |     | 140 |     |     |     |
| Gln | Asp | Lys | Asn | Glu | Glu | Tyr | Cys | Glu | Arg | Lys | Ile | Asn | Ser | Arg | Gly |
| 145 |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     |     | 160 |
| Ala | Ile | Thr | Arg | Asp | Gly | Leu | Met | Lys | Ile | Asp | Trp | Arg | Ile | Gln | Met |
|     |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Val | Phe | Ile | Asp | Asn | Ser | Thr | Asp | Leu | Glu | Ile | Ile | Glu | Lys | Cys | Tyr |
|     |     | 180 |     |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Ser | Met | Phe | Asn | Lys | Pro | Lys | Glu | Asp | Gly | Ser | Ser | Gly | Tyr | Pro | Tyr |
|     | 195 |     |     |     |     | 200 |     |     |     |     |     | 205 |     |     |     |
| Cys | Gly | Met | Ser | Phe | Arg | Leu | Ala | Asn | Met | Ala | Ala | Gly | Asn | Ser | Glu |
|     | 210 |     |     |     |     | 215 |     |     |     |     |     | 220 |     |     |     |
| Ile | Cys | Tyr | Arg | Arg | Gly | Lys | Asn | Asp | Ala | Lys | Leu | Phe | Gln | Met | Asn |
| 225 |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |     |
| Ile | Asp | Ser | Gly | Asp | Ala | Pro | Gln | Leu | Cys | Gly | Ala | Met | His | Ser | Asp |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Asn | Ile | Phe | Ala | Phe | Pro | Thr | Pro | Ile | Pro | Thr | Ser | Pro | Thr | Asn | Glu |
|     |     | 260 |     |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Thr | Ile | Ile | Thr | Ser | Lys | Tyr | Met | Met | Val | Thr | Ala | Arg | Met | Asp | Ser |
|     | 275 |     |     |     |     | 280 |     |     |     |     |     | 285 |     |     |     |
| Phe | Gly | Met | Ile | Pro | Glu | Ile | Ser | Val | Gly | Glu | Val | Ser | Val | Leu | Thr |
|     | 290 |     |     |     |     | 295 |     |     |     |     |     | 300 |     |     |     |
| Ser | Ile | Ile | Ser | Val | Leu | Ala | Ala | Ala | Arg | Ser | Met | Gly | Thr | Gln | Ile |
| 305 |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |     |
| Glu | Lys | Trp | Gln | Lys | Ala | Ser | Asn | Thr | Ser | Asn | Arg | Asn | Val | Phe | Phe |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Ala | Phe | Phe | Asn | Gly | Glu | Ser | Leu | Asp | Tyr | Ile | Gly | Ser | Gly | Ala | Ala |





|             |            |            |            |            |            |      |
|-------------|------------|------------|------------|------------|------------|------|
| cagagacggt  | gtcagtggta | gcctagagag | gccgctaaca | gacaggagcc | gaacgggggc | 120  |
| ttccgctcag  | cagagaggca | agatggctac | ggcagggggt | ggctctgggg | ctgacccggg | 180  |
| aagtcggggg  | ctccttcgcc | ttctgtcttt | ctgcgtccta | ctagcagggt | tgtgcagggg | 240  |
| aaactcagtg  | gagaggaaga | tatatatccc | cttaaataaa | acagctccct | gtgttcgcct | 300  |
| gctcaacgcc  | actcatcaga | ttggctgcc  | gtcttcaatt | agtggagaca | caggggttat | 360  |
| ccacgtagta  | gagaaagagg | aggacctaca | gtgggtattg | actgatggcc | ccaaccccc  | 420  |
| ttacatggtt  | ctgctggaga | gcaagcattt | taccagggat | ttaatggaga | agctgaaagg | 480  |
| gagaaccagc  | cgaattgctg | gtcttgca   | gtccttgacc | aagcccagtc | ctgcctcagg | 540  |
| cttctctcct  | agtgtacagt | gccccaatga | tgggtttggt | gtttactcca | attcctatgg | 600  |
| gccagagttt  | gtcactgca  | gagaaataca | gtggaattcg | ctgggcaatg | gtttggctta | 660  |
| tgaagacttt  | agtttcccca | tctttcttct | tgaagatgaa | aatgaaacca | aagtcatcaa | 720  |
| gcagtgcctat | caagatcaca | acctgagtc  | gaatggctca | gcaccaacct | tcccactatg | 780  |
| tgccatgcag  | ctcttttcac | acatgcatgc | tgtcatcagc | actgccacct | gcatgcggcg | 840  |
| cagctccatc  | caaagcacct | tcagcatcaa | cccagaaatc | gtctgtgacc | ccctgtctga | 900  |
| ttacaatgtg  | tggagcatgc | taaagcctat | aaatacaact | gggacattaa | agcctgacga | 960  |
| cagggttgtg  | gttgctgcc  | cccggctgga | tagtcgttcc | ttttctgga  | atgtggcccc | 1020 |
| aggggctgaa  | agcgcagtgg | cttcctttgt | caccagctg  | gctgctgctg | aagctttgca | 1080 |
| aaaggcacct  | g          |            |            |            |            |      |